

## Claims

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1. A process for the preparation of compound fertilizer granules containing at least two of the plant nutrients nitrogen, phosphorus and potassium, said process comprising the steps of:
  - 5 providing a solid feed material comprising at least one solid fertilizer raw material and optionally recycle material,  
feeding the feed material or a part thereof into a melter for melting a desired portion thereof and keeping said portion in molten state,  
feeding the ~~molten or~~ partly molten material and optionally other desired solid raw materials to a granulator to obtain a granulated product, and  
10 cooling and optionally screening the granulated product to obtain dry compound fertilizer granules having a desired size distribution,  
provided that no water or aqueous liquid is introduced into the process.
2. A process according to claim 1, wherein the process is carried out  
15 continuously, and the molten portion of the feed material is kept constant during the process by controlling the flow rate of the feed material and the temperature of the melter.
3. A process according to claim 1 or 2, wherein the temperature of the ~~molten or~~ partly molten feed material is between 70 °C and 135 °C.
- 20 4. A process according to <sup>claim 1</sup> ~~any of claims 1-3~~, wherein the melting is effected by introducing hot air into said melter.
5. A process according to claim 4, wherein the temperature of the hot air introduced into the melter is between 200 °C and 550 °C.
- 25 6. A process according to <sup>claim 1</sup> ~~any of claims 1-5~~, wherein from 10 to 40% by weight of the feed material melts in the melter.
7. A process according to <sup>claim 1</sup> ~~any of claims 1-6~~, wherein said solid feed material to be fed into the melter comprises all individual components of the raw materials.
- 30 8. A process according to <sup>claim 1</sup> ~~any of claims 1-6~~, wherein said solid feed material to be fed into the melter comprises one or some of the individual components of the raw materials, and the rest of the components is fed to the granulator.

- a 9. A process according to <sup>claim 1</sup> ~~any of claims 1-8~~, wherein said solid feed material to be fed into the melter is preheated.
- a 5 10. A process according to <sup>claim 1</sup> ~~any of claims 1-9~~, wherein the solid raw material to be fed to the granulator is preheated.
11. A process according to claim 9 ~~or 10~~, wherein the material is preheated to a temperature in the range from 80 °C to 110 °C.
- a 10 <sup>sub 10</sup> 12. A process according to <sup>claim 1</sup> ~~any of claims 1-11~~, wherein the granulation temperature is in the range from 75 °C to 125 °C, preferably from 80 °C to 125 °C.
- a 15 13. A process according to <sup>claim 1</sup> ~~any of claims 1-12~~, wherein the fertilizer raw materials are selected from the group consisting of urea, diammonium phosphate (DAP), K<sub>2</sub>SO<sub>4</sub> (SOP), monoammonium phosphate (MAP), potassium chloride (MOP), phosphate rock, single superphosphate (SSP), triple superphosphate (TSP), ammonium sulfate (AS) and ammonium chloride (AC).
14. A process according to claim 13, wherein the fertilizer raw materials comprise urea and at least one other of said fertilizer raw materials.
- a 20 15. A process according to <sup>claim 1</sup> ~~any of claims 1-14~~, wherein additionally at least one material selected from the group consisting of magnesium sulfate and micronutrients is introduced into the process.
- a 25 16. A process according to <sup>claim 1</sup> ~~any of claims 1-15~~, wherein additionally at least one filler selected from the group consisting of bentonite, calcite, calcium oxide, anhydrous calcium sulfate, calcium sulfate hemihydrate, dolomite, and sand, is introduced into the process.
17. A process according to claim 1, wherein the undersize material and the oversize material obtained in the screening are recirculated as said recycle material, said oversize material optionally being milled after the screening.
- a 30 <sup>sub 30</sup> 18. A process according to <sup>claim 1</sup> ~~any of claims 1-17~~, wherein the moisture content of the dry compound fertilizer granules is below 0.6% by weight, preferably below 0.3% by weight.
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